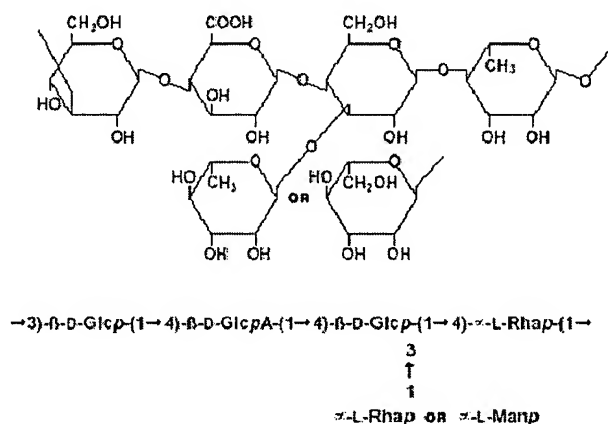


## REMARKS

## Rejections Under 35 U.S.C. § 112

Claims 65, 70 and 78 stand rejected as indefinite for containing the supposed “trademark/trade name” welan gum. Applicants respectfully disagree. The term welan gum is not a trademark or trade name, and is a descriptive term used to describe a polysaccharide gum consisting of tetrasaccharide repeating units. (See below).



Welan gum is available from multiple suppliers, including Kelco and V-Labs. The process for making welan gum is disclosed in U.S. Patents 4,342,866 and 4,963,668.

## Rejections Under 35 U.S.C. § 103

Claims 43-49, 52-53, 55-62, 65-67 and 69-78 stand rejected under 35 U.S.C. 103(a) as unpatentable over Moore, Jr. in view of Banerjee et al. and further in view of Andersen et al. Applicants respectfully disagree.

Obviousness requires some suggestion or motivation to combine the references. There is no suggestion or motivation to combine Andersen with Moore. Moore and Andersen use completely different processes to achieve products with completely different purposes. Moore is directed to a refractory material that includes colloidal silica. Andersen is not directed to an investment

casting mold at all. Andersen is directed to containers having an inorganically filled matrix. The matrix includes a binder, which may be a polysaccharide. The matrix composition of Andersen is not used to form an investment casting mold, or any other type of mold. Instead, the matrix material is formed into a container. (col. 8, lines 3-6). In Moore, the materials are selected to produce shaped refractories and refractory molds. (col. 1, line 33). In contrast, the materials in Andersen are selected to provide a suitable liquid-tight container. (col. 4, lines 65-67). Andersen makes no mention of investment casting. The role of the components used to create a mold for casting are very different from those used to create a liquid-tight container. Although the container of Andersen requires an inorganic filler, it lists over 35 materials as possibilities. (col. 25, lines 20-34). Andersen does not present any specific compound formulations with any material in common with the refractory material of Moore. Thus, Andersen and Moore use completely different processes to achieve products made of completely different materials with completely different purposes.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990). The Examiner is merely selecting elements from multiple references, without regard for any motivation to combine the references. Because one skilled in the art would not be motivated to combine Andersen with Moore, claims 43-49, 52-53, 55-62, 65-67 and 69-78 are not obvious. Applicants respectfully request that the rejections be withdrawn.

Additionally, even if combined, the references do not teach all the elements of claims 43-49, 52-53, 55-62, 65-67 and 69-78. Andersen teaches that an inorganic binder, such as a polysaccharide, may be added in an amount from about 1% to about 60%. Claims 43-49, 52-53, 55-62, 65-67 and 69-78 require an amount of 0.01% to about 1%, which is below the disclosed range. Applicants respectfully request that the rejections be withdrawn.

Additionally, claims 48, 69, and 77 are not obvious for the additional reason that none of the above references teaches or suggests an alumina component with particles of screen size 14x70 at about 40% to about 60% by weight of the composition and particles of screen size -70 at about 2% to about 10% by weight of the composition. Although the Examiner asserts that the use of the claimed particle distribution would be obvious, he presents no information supporting this assertion. Moore presents one example with equal portions of alumina sized at 325 mesh, 100 mesh, and 30 mesh. (col. 10, lines 60-68). This provides a maximum amount of particles sized at 14x70 at about 30%, significantly lower than the claimed 40%. The example in Moore includes at least 66% alumina particles smaller than 70 mesh, which is astronomically higher than the claimed 2% to 10%. Thus, Moore teaches alumina particles much smaller than those required in claims 48, 69, and 77. It is known in the art that particle size has an important effect on the properties of the mold in investment casting, and it would not be obvious to use the claimed particle size.

Nor does Banerjee teach the claimed particle size. It should be noted that Banerjee is not even directed to investment casting. Banerjee teaches a casting composition including alumina at particles sizes 25% at 4mm, 20% at 1 mm, 15% at 0.2 mm, and 5% at 0.05 mm. (col. 3, line 67 to col. 4, line 5). The combination of 1 mm and 0.2 mm particles in Banerjee is thus only 35%, which is lower than the 40% required in the claims for particles of screen size 14x70 (0.2 to 1.1 mm). Additionally, claims 48, 69, and 77 have a maximum limit of 10% for particles of screen size screen size of 6x14 (1.1 to 3 mm), while Banerjee teaches 25% particles with an average diameter of 4 mm. Thus, the overall particle size taught by Banerjee is significantly larger than that claimed in claims 48, 69, and 77.

Thus, none of the cited references teach or suggest the particle distribution of claims 48, 69, and 77. Applicants respectfully request that the rejections be withdrawn.

Claims 65, 70, and 78 are not obvious for the additional reason that none of the references teaches or suggests the use of welan gum. Although Andersen

presents a laundry list of dozens of possible binders, it does not even mention welan gum. By presenting many other binders, including other polysaccharides, and not mentioning welan gum, Andersen arguably teaches against using welan gum. Therefore, claims 65, 70, and 78 are not obvious. Applicants respectfully request that the rejections be withdrawn.

Claims 50 and 63 stand rejected under 35 U.S.C. 103(a) as unpatentable over Moore, Jr. in view of Banerjee et al. and further in view of Andersen et al. and Schramm. For the same reasons described above for claims 43-49, 52-53, 55-62, 65-67 and 69-78, there is no suggestion or motivation to combine Andersen with Moore. Therefore, claims 50 and 63 are not obvious. Applicants respectfully request that the rejections be withdrawn.

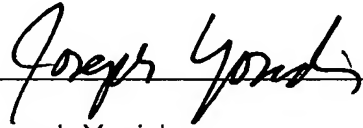
Claims 51 and 64 stand rejected under 35 U.S.C. 103(a) as unpatentable over Moore, Jr. in view of Banerjee et al. and further in view of Andersen et al. and Doles. For the same reasons described above for claims 43-49, 52-53, 55-62, 65-67 and 69-78, there is no suggestion or motivation to Andersen with Moore. Therefore, claims 51 and 64 are not obvious. Applicants respectfully request that the rejections be withdrawn.

Claims 54 and 68 stand rejected under 35 U.S.C. 103(a) as unpatentable over Moore, Jr. in view of Banerjee et al. and further in view of Andersen et al. and Vandermeer et al. For the same reasons described above for claims 43-49, 52-53, 55-62, 65-67 and 69-78, there is no suggestion or motivation to combine Andersen with Moore. Therefore, claims 54 and 68 are not obvious. Applicants respectfully request that the rejections be withdrawn.

### SUMMARY

Applicants believe the present application is now in condition for allowance. If the Examiner has any remaining issues, he is invited to contact the undersigned attorneys for the Applicants via telephone if such communication would expedite this application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joseph Yosick", is written over a horizontal line.

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